Part II. INSPECTION TECHNIQUES

Section 1. FUSELAGE

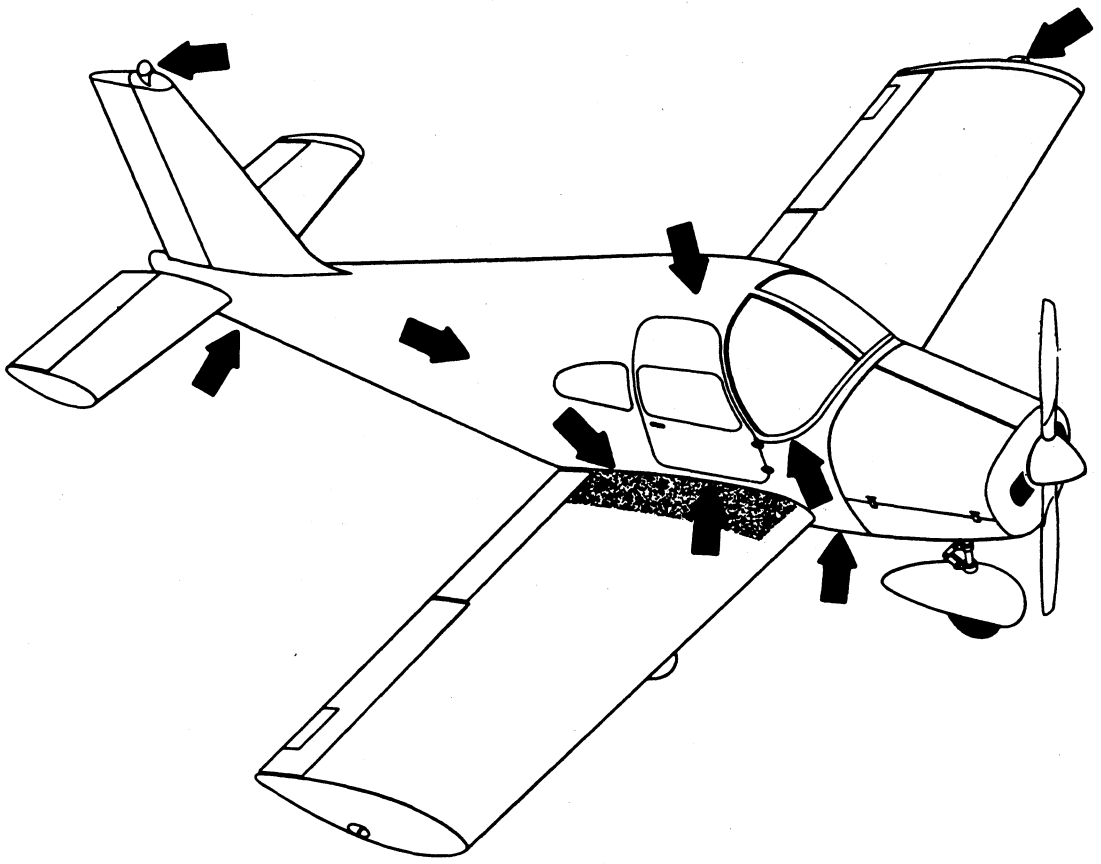


FIGURE 1-1. Inspection chart – fuselage.

Before starting the inspection, be certain that all plates, access doors, and fairings have been opened or removed from the areas to be inspected. When opening inspection plates and cowling, take note of any oil or other foreign material accumulation which may offer evidence of fluid leakage or other abnormal condition that should be corrected. Make note of these items, then thoroughly clean all areas to be inspected.

Examine the interior fuselage structure through access doors and inspection openings. Look for bent longerons or braces, cracked tubing or bulkheads, loose bolts or rivets, and missing safety wire or cotter pins. Carefully inspect the airframe structure using a magnifying glass at the wing, strut, and landing gear attachment fittings. Look for distortion, cracks, poor welds, or elongated bolt holes. Determine that the entire structure is free from corrosion, rust, deterioration, and other defects.

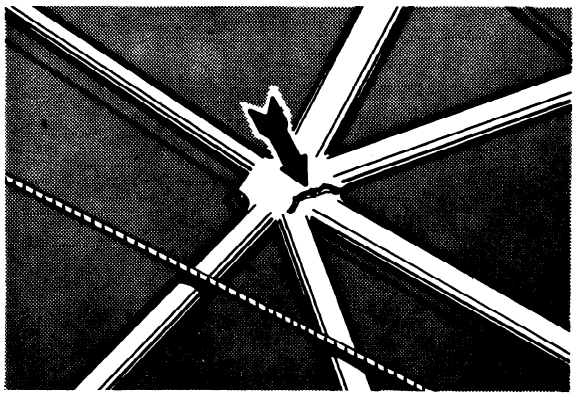


FIGURE 1-2. Cracked fuselage structure.

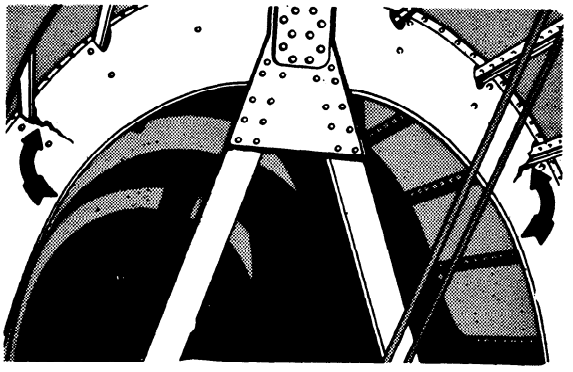


FIGURE 1-3. Cracked former.

Worn or damaged structure, and components that are defective, should be repaired or replaced by persons authorized in FAR 43, and in accordance with the manufacturer's instructions.

Inspect fabric or skin for tears, distortion, deterioration, or other defects. Check the condition of protective coating. Be sure that the fabric or skin attachment to the structure is satisfactory and that there are no pulled or loose rivets, missing or loose screws, or broken rib lacing.

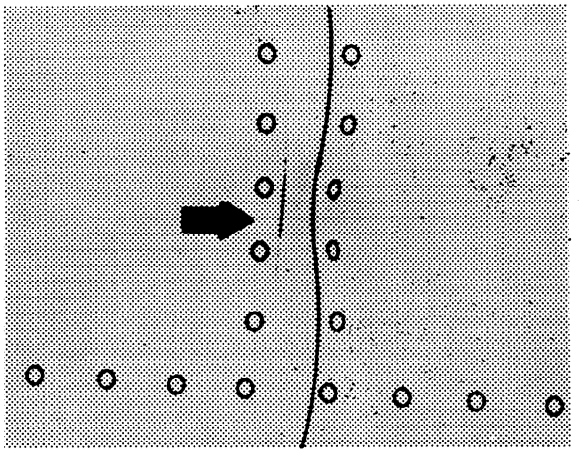


FIGURE 1-4. Distorted fuselage skin.

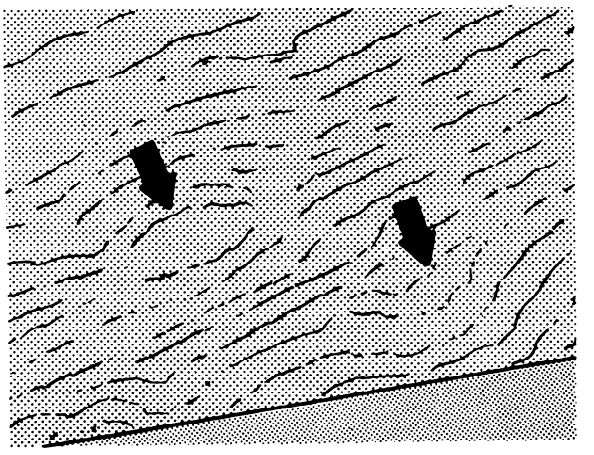


FIGURE 1-5. Deteriorated fuselage fabric.

If the condition of the fabric is questionable, a test should be made by a qualified person to determine if the fabric meets the minimum strength requirements.

Check external bracing and attachment fittings for distortion, cracks, or any other imperfections. Check struts or brace wires for condition and security of attachment. Check

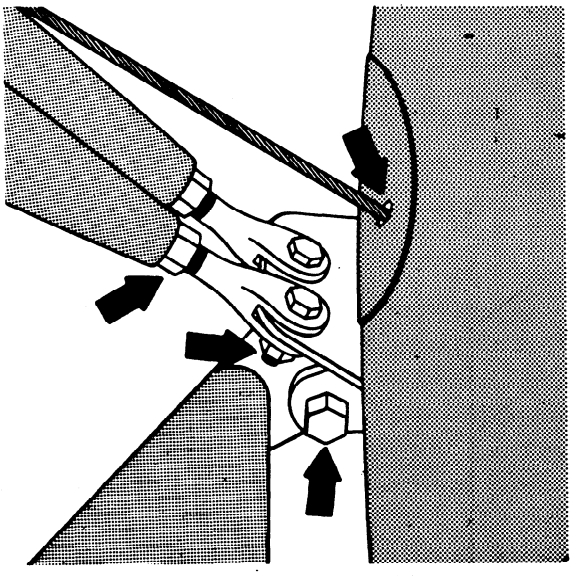


FIGURE 1-6. External wing bracing attachment checkpoints.

adjustable ends for cracks, excessive bearing wear, worn or damaged threads, loose locking nuts, and any other defects. Damaged brace wires or struts should be repaired or replaced in accordance with the manufacturer's instructions prior to further operation.

Examine control system mechanisms for condition and proper operation. Inspect bellcranks for cracks, proper alignment, and security. Rotate pulleys to check for flat spots, to provide new bearing surfaces for cables, and to check for smooth, free operation.

Check control rods for security, freedom of movement, abrasion, distortion, corrosion, and proper alignment through formers and bulkheads. Inspect control rod-ends for cracks, security, evidence of misalignment, and excessive clearance in bearings.

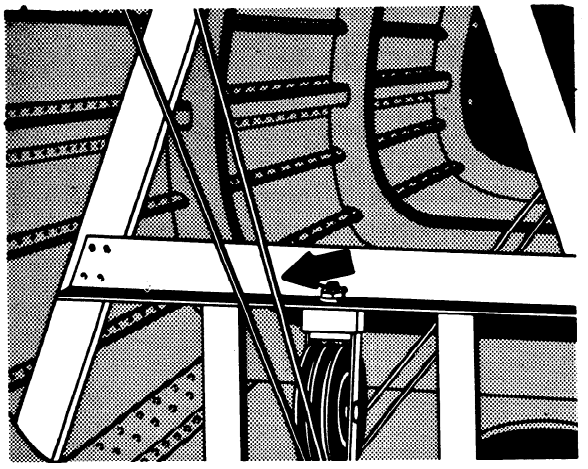


FIGURE 1-7. Proper cable routing.

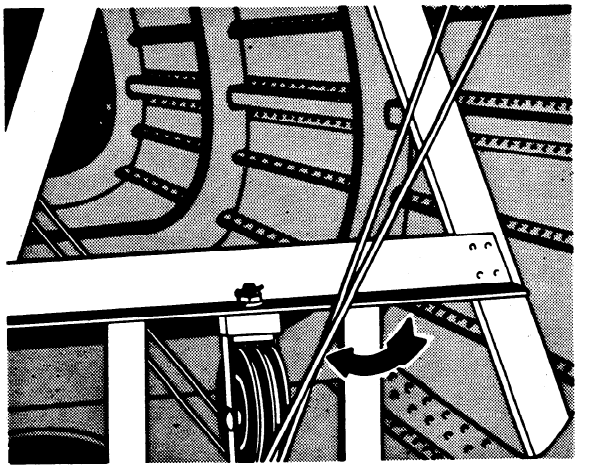


FIGURE 1-8. Improper cable routing.

Check cables for proper tension and routing through fairleads and pulleys. Control cables should be replaced if damaged, distorted, worn, or corroded, even though the strands are not broken. Control rods should be replaced if cracked, gouged, or damaged in any manner other than superficial chafing.

Inspect hydraulic valves, actuators, and boost controls for condition, leaks, security of attachment, freedom of operation, or other defects. Particular attention should be given to flexible hoses carrying fluid under pressure.

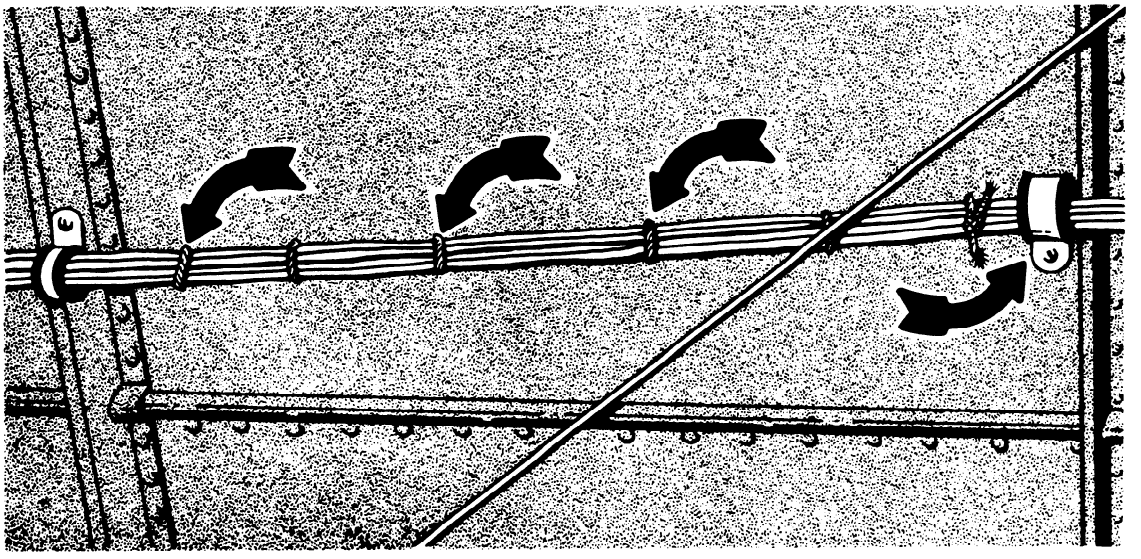


FIGURE 1-9. Proper routing of electrical wiring.

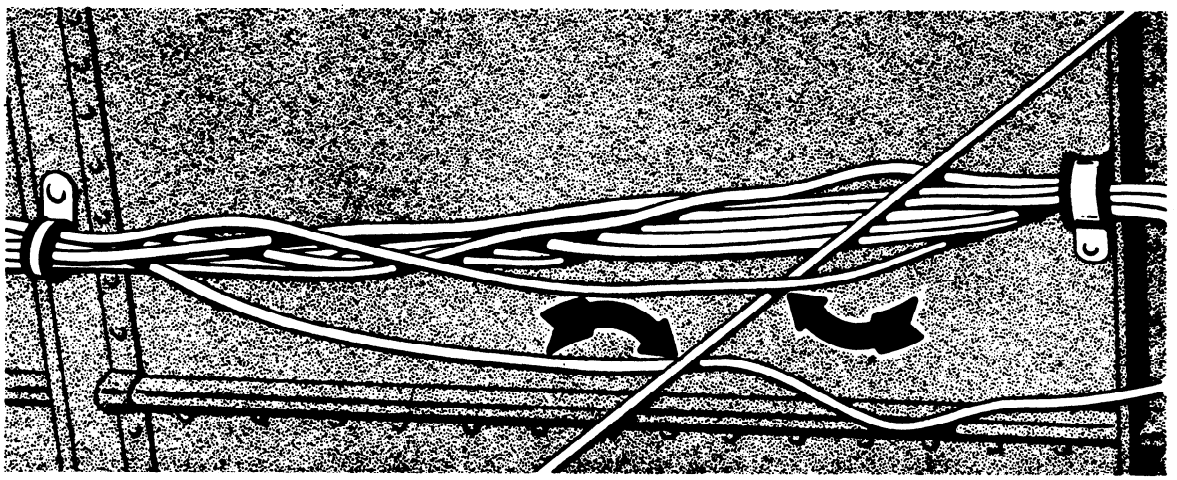


FIGURE 1-10. Improper routing of electrical wiring.

Check electrical wiring for proper installation and security of attachment. Check for chafing and general condition. Inspect installation of grommets, plastic tubing, and connectors. Determine that soldered electrical connections are not deteriorated or corroded, or that terminals are not weak or misaligned. Inspect switches, fuses, and circuit breakers for proper condition and mounting.

Wiring that has been damaged should be replaced and the cause of damage corrected.

Inspect hydraulic system hoses and metalic fluid lines for leaks, dents, kinks, cracks, chafing, and security. Inspect fluid reservoirs for proper fluid level.

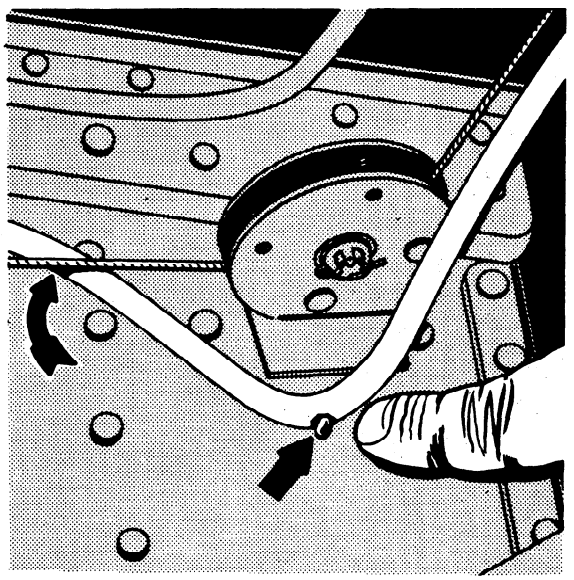


FIGURE 1-11. Leakage from chafed hydraulic line.

When leakage cannot be corrected by tightening connections or replacing packings, a serviceable unit should be installed. Care must be exercised in tightening connections or they may be damaged beyond use.

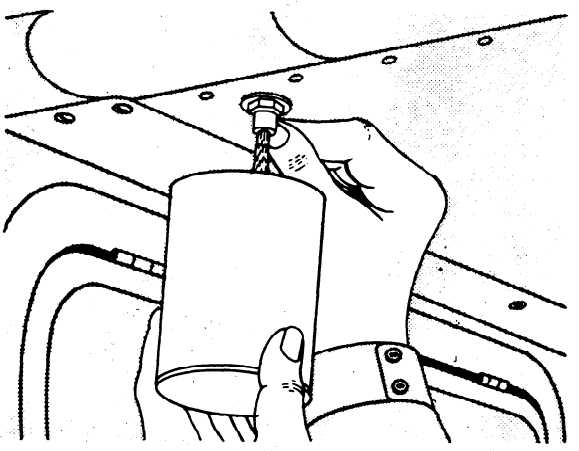


FIGURE 1-12. Draining fuel tank sump.

Inspect fuel tanks and filler caps for proper alignment, security of attachment, and evidence of leaks. Be certain that vents and vent lines are free from obstructions. Examine fuel lines and connections for leaks, cracks, chafing, and security of attachment. Ensure that overflow and drain lines are not kinked or broken, and that they extend beyond the aircraft skin line (overboard).

Fuel systems incorporate fuel tank sumps and sediment bowls to trap water that could pass through the fuel lines to the engine. Periodically drain fuel from the tank sumps and the sediment bowl, and examine for water or other contamination. Replace and safety drain plugs.

Tests have shown that, in some cases, relatively large quantities of fuel must be drained before an indication of water is noted. Determine the characteristics of your aircraft and drain accordingly. The carburetor, fuel lines, and tank sumps should be drained, if an abnormal amount of water is detected in the main fuel strainers.

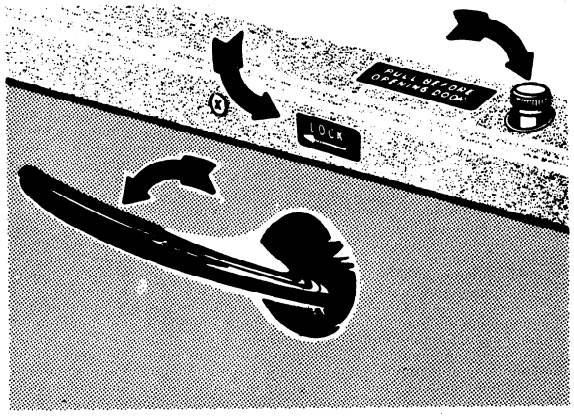


FIGURE 1-13. Doorlock checkpoints.

Abnormal water accumulation is reason to suspect the fuel dispensing system of your fuel supplier. He should be alerted to the presence of water to permit corrective action.

Inspect cabin and cockpit entrance doors and emergency exits for general condition. Check them for ease of operation and for security of attachment. If the aircraft cabin is pressurized, ensure that the door and window seals are intact and in place. Determine that emergency exit placards are clearly legible.

Ensure that the doors and emergency exits can be opened from inside the aircraft, and can be positively locked to prevent inadvertent opening during flight. *Do not use a seal or sealant which will prevent operation of emergency exits!* Follow the manufacturer's recommendations exactly.

Examine baggage compartment for general condition. Inspect floor for defects. Check door hinges and locks for condition and satisfactory operation.

Inspect fuselage or hull for damage and defects, such as corrosion, deterioration, loose rivets and screws. Inspect skin seams for separation. Accumulations of liquids should be drained. The presence of any appreciable amount of liquids will affect the aircraft's center of gravity. Be certain that all drain plugs have been reinstalled and safetied.

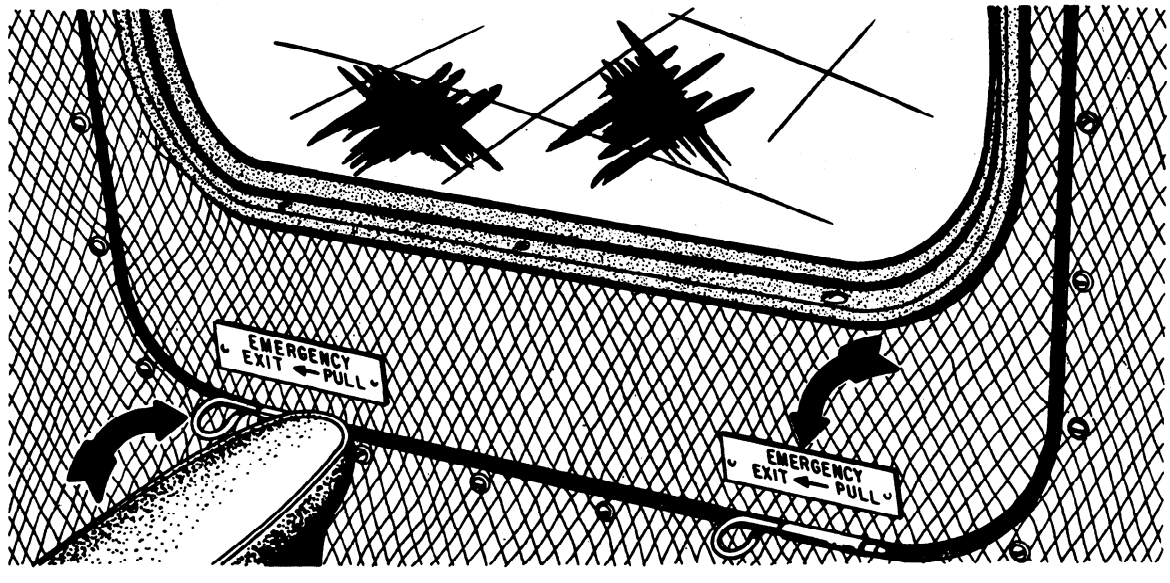
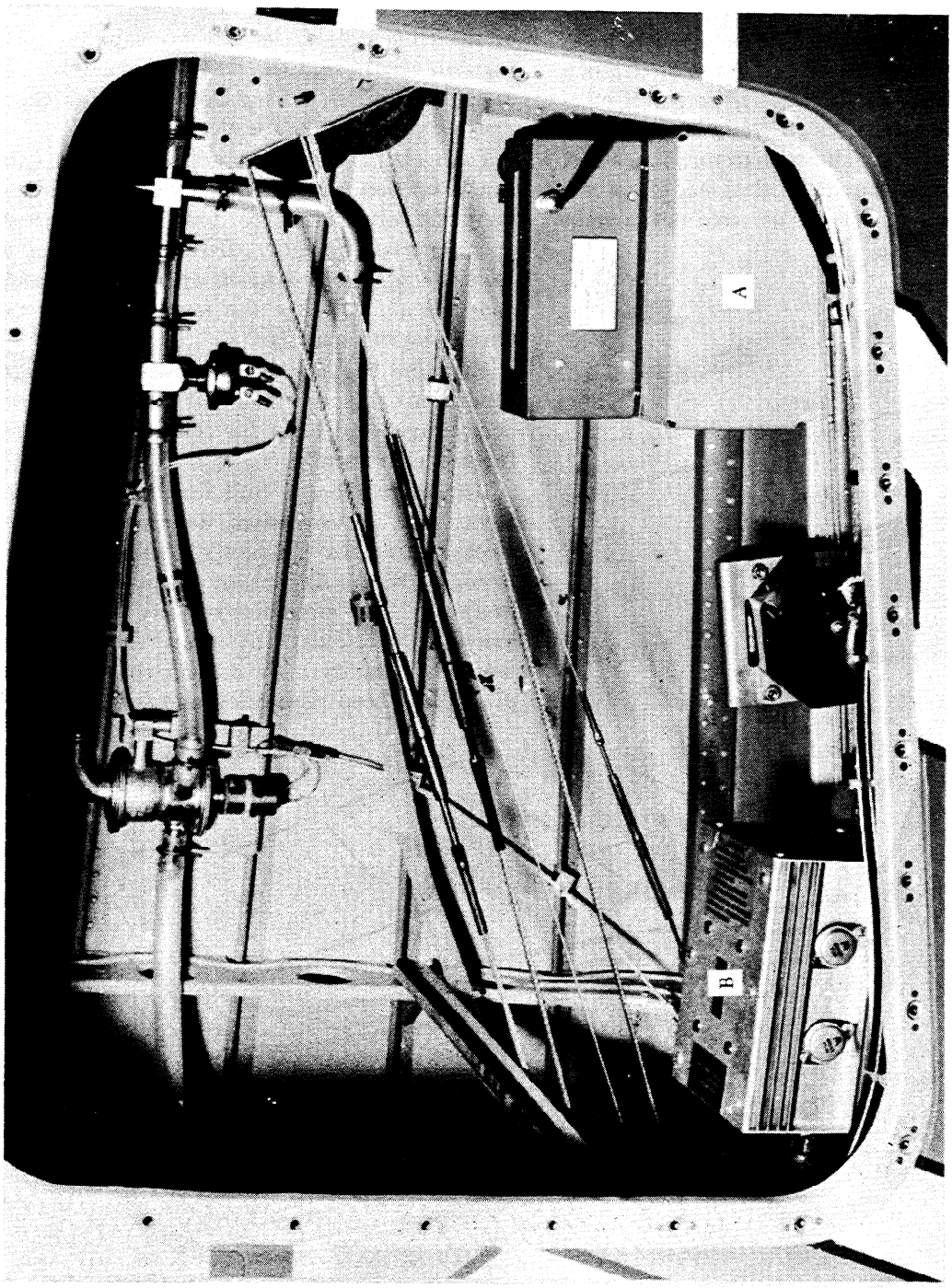


FIGURE 1-14. Emergency exit checkpoints.

Whenever a panel is removed for interior inspection, check the condition of all panel fasteners. Check the opening edges and the panel for cracks. All accessories should be inspected for security and, if movable parts are involved, for freedom of movement. Figure 1–15 shows the interior of the aft fuselage of a light twin. Observe the mounting of the emergency locator transmitter, "A," and the yaw damper, "B."



A. Emergency locator transmitter.
B. Yaw damper.

FIGURE 1-15. Interior aft fuselage (light twin)